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MANUAL TRAINING

Ten Lessons in Woodworking

by

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Prepared at the request of

MANETTE A. MYERS

State Director of Industrial Education

STATE BOARD OF EDUCATION

Santa Fe, N. M.

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WOODWORKING

LESSON NO. I.

Fitting a Board to Size.

I. Steps in the Process.
   (a) Selecting the material. (soft wood, pine, cottonwood, etc.)
   (b) Making a true surface.
   (c) Making a true edge.
   (d) Making a true end.
   (e) Gauging required thickness.
   (f) Gauging required width.
   (g) Measuring required length.

II. Dimensions.
   (a) Rough dimensions, 12¼ x 4¼ x ⅞ inches.
   (b) Finished dimensions, 12 x 4 x ¾ inches.

III. Tools.
   (a) Square.
   (b) Cross-cut saw.
   (c) Rip-saw.
   (d) Fore-plane.
   (e) Try-square.
   (f) Block-plane.
   (g) Marking-gauge.
   (h) Ruler.
   (i) Back-saw.

IV. Testing the Work.
   (a) Try-square test for surface.
   (b) Try-square test for edge.
   (c) Try-square test for end.
   (d) Face marks.

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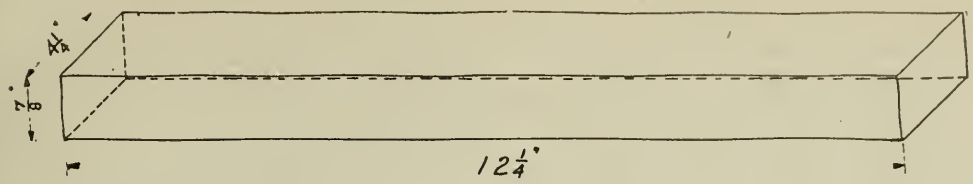
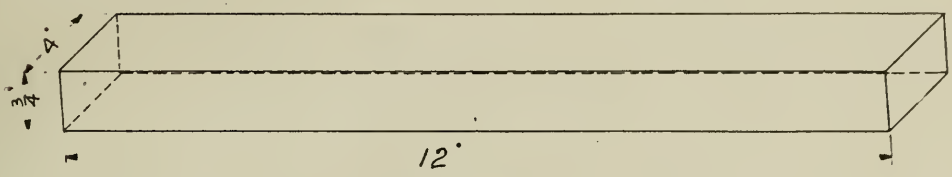
V. Drawings.



(A) Rough.



(B) Finished.

VI. Cautions.

(a) Avoid pinching the wood in the bench vise.
(b) Avoid chipping the corners when block-planing the ends.

LESSON NO. II.

The Cross-lap Joint.

I. Steps in the Process.

(a) Selection of material. (pine or any soft wood.)
(b) Fitting to size in one piece. (See Lesson I.)
(c) Laying out joint. (See drawing.)
(d) Cutting out joint.
(e) Putting joint together.

II. Dimensions.

(a) Rough size, 12 1-2 x 1 3-4 x 7-8 inches.
(b) Finished size, 12 1-4 x 1 1-2 x 3-4 inches.
(c) Size of parts, 6 x 1 1-2 x 3-4 inches.

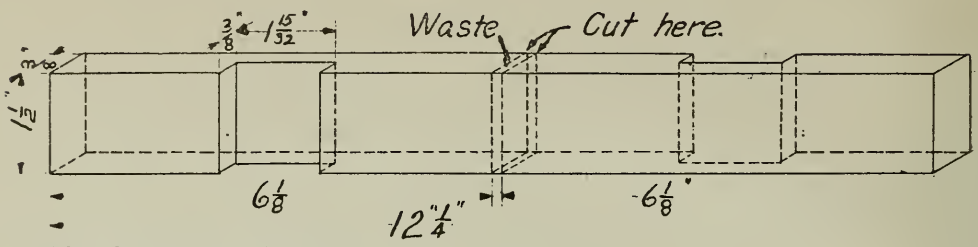
III. Tools.

(a) Crosscut-saw, rip-saw, fore-plane, block-plane, tri-square, marking guage, back-saw, chisel and mallet.

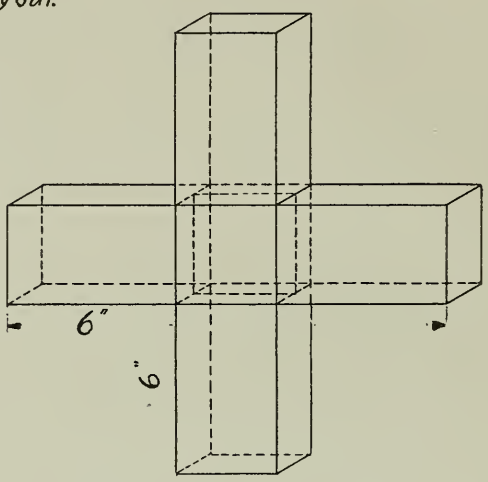
IV. Testing work.

(a) First, tests required in lesson 1.
(b) Test for square corners after it is finished.

V. Drawings.



(a) One piece layout.



(b) Assembled drawing.

VI. Cautions.

(a) Do not try to fit up in separate parts.

(b) Slots for the joints should be cut 1-32 inch small, then by planing off the edge a tight joint can be secured.

Give instructions on the care of tools.

LESSON NO. III.

Blind Mortise and Tenon Joint.

I. Steps in the Process.

(a) Selecting material. (Pine or any kind of wood.)

(b) Fitting up in one piece. (See Lesson II.)

(c) Laying out mortise. (See drawing.)

(d) Laying out tenon. (See drawing.)

(e) Boring and chiseling out mortise.

(f) Cutting out tenon.

(g) Putting joint together.

II. Dimensions.

(a) Rough stock, 10 1-2 x 2 1-8 x 1 3-8 inches.
(b) Finished stock, 10 1-4 x 2 x 1 1-4 inches.
(c) Finished parts, 5 x 2 x 1 1-4 inches.

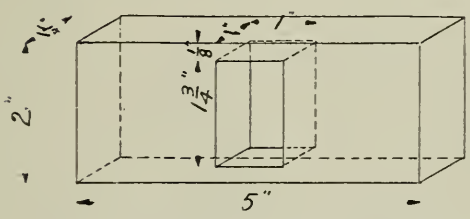
III. Tools.

(a) Cross-cut and rip-saw, try-square, fore-plane, block-plane, back-saw, marking-gauge, brace and bit, chisel and mallet.

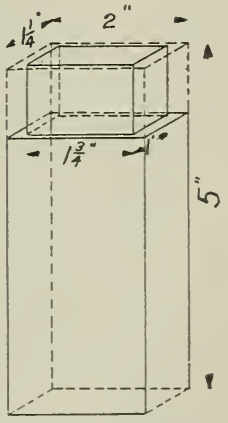
IV. Testing Work.

(a) With try-square.
(b) Getting out the different parts in rough stock.
(c) Fitting the different parts to size. (See Lesson I.)
(d) The layout of the different parts. (See drawing.)
(e) Modeling ends. (A variety of designs possible.)
(f) Cutting mortises. (See Lesson III.)
(g) Cutting tenons. (See Lesson III.)
(h) Boring holes and making wedges.
(i) Assembling work.

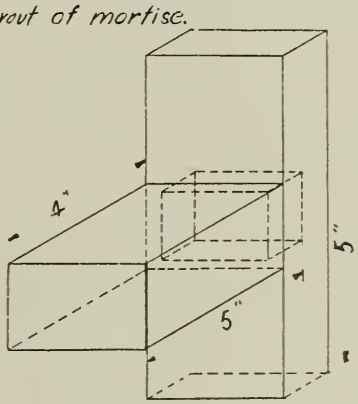
V. Drawings.



(A) Showing layout of mortise.



(B) Showing layout of tenon.



(C) Assembly drawing.

VI. Cautions.

(a) Tenon should fit mortise snugly.
(b) Face marks (from Lesson 1) should appear on all parts.

LESSON NO. IV.

Edge to Edge Glue Joint.

I. Steps in the Process.

(a) Selecting material. (Pine or any soft wood.)
(b) Two edges planed up together. (See drawing.)
(c) Laying out joint. (See drawing.)
(d) Boring dowel-pin holes and inserting dowels.
(e) Putting joint together. (See drawing.)
f) Clamping up joint.

II. Dimensions.

(a) According to work.

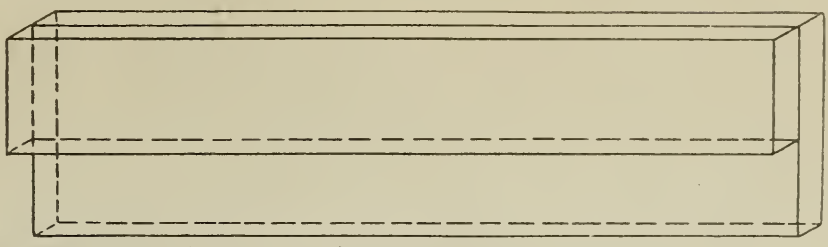
III. New Tools Used.

(a) Jointer plane if joint is unusually long.

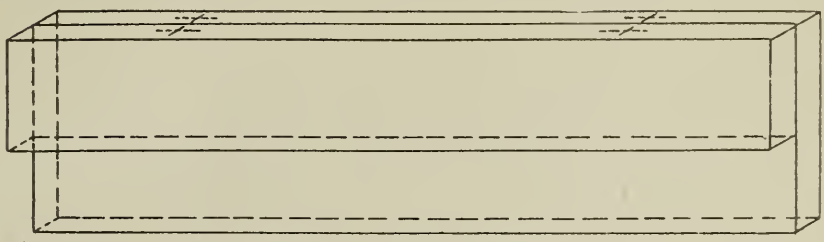
IV. Testing Work.

(a) Testing with carpenter's square for flat surface.

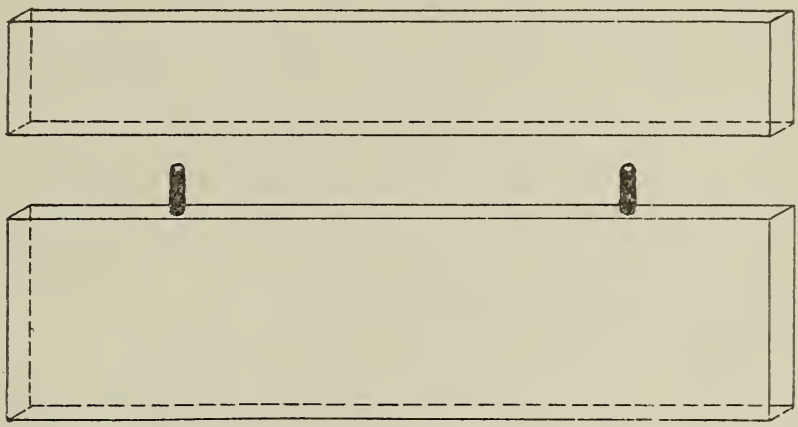
V. Drawings.



(a) Method of planing up joint.



(b) Method of laying out joint.



(C) Method of putting joint together. KJB

VI. Cautions.

(a) Be sure joint is tight at ends.
(b) Do not place dowels too far from ends and see they fit tightly.
(c) Do not clamp in a warped or twisted condition.

LESSON NO. V.

I. Steps in the Process.

(a) Selecting material. (Any soft wood.)
(b) Laying out stock. (See drawing.)
(c) Cutting to shape.
(d) Planing up surfaces.
(e) Chamfering edges.

II. Dimensions.

(a) Rough stock, 60 1-8x14 1-8 inches.
(b) Finished size, 60 x 14 inches.

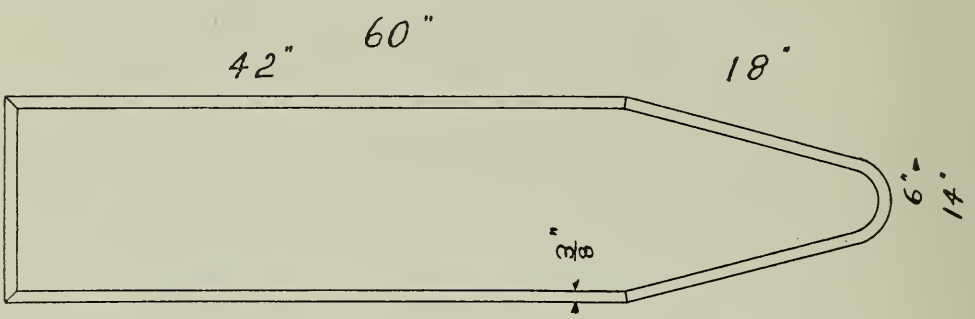
III. Tools.

(a) Cross-cut saw, rip-saw, fore-plane, block-plane, carpenter's square, try-square, compass, and turning-saw.

IV. Testing Work.

(a) Testing with carpenter's square for flat surface.

V. Drawings.



(a) Working sketch.

VI. Cautions.

(a) If pine lumber is used have it free from pitch-pockets as the heat from ironing will cause the pitch to run and may therefore soil the ironing materials.

LESSON NO. VI.

Table Book Rack.

I. Steps in the Process.

(a) Selecting material. (Any desired wood.)

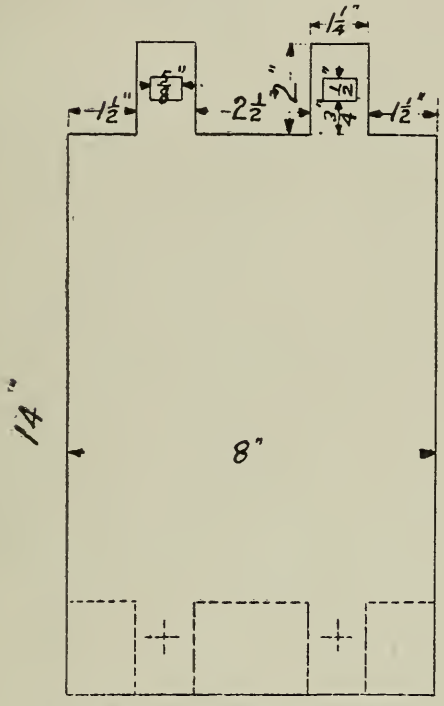
II. Dimensions.

(a) Finished drawings.
1. Length 14 inches.
2. Width 8 inches.
3. Height 10 inches.

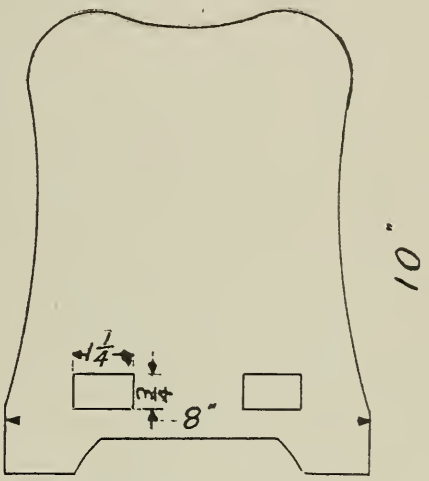
III. Tools.
(a) Rip and cross-cut saws, chisel, mallet, back saw, turning saw, try-square, brace and bit, fore-plane, block-plane, ruler, and marking gauge.

IV. Testing Work.
(a) Testing corners with try-square.
(b) Testing ends for regular model by superposition.

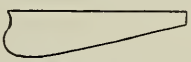
V. Drawings.



(b) Shelf showing tenon.



(a) End design.


(c) Wedge.

VI. Cautions.
(a) Do not drive wedges too tightly as there is danger of splitting the stock.
(b) Cut tenons and mortises with great care.

LESSON NO. VII.

Plant Stand.

I. Steps in the Process.
(a) Selecting material. (Any desirable wood will do.)
(b) Getting out the different parts in rough stock.
(c) Fitting different parts to size. (See Lesson I.)

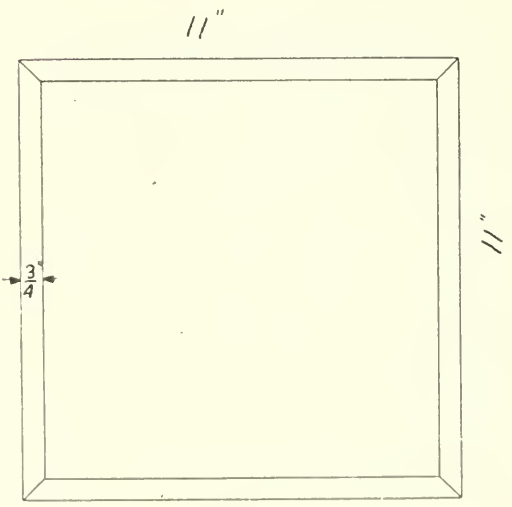
(d) Laying out model for legs.
(e) Chamfering upper corners of top.
(f) Cutting corners of shelf and upper support.
(g) Boring holes in legs.
(h) Assembling and screwing together.

II. Dimensions.
(a) Finished sizes.
1. Top, 11 x 11 x 1 1-2 inches.
2. Shelf and support, 8 x 8 x 3-4 inches.
3. Legs, 22 1-2 x 1 1-4 x 3-4 inches.

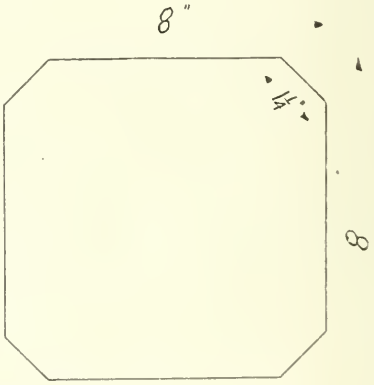
III. Tools.
(a) Cross-cut saw, turning saw, fore plane, block plane, marking gauge, try-square, carpenter's square, brace and bit, screw driver.

IV. Testing Work.
(a) Testing for square corners.
(b) Testing for exact model reproduction of legs.

V. Drawings.



(A) Top.



(B) Shelf.

(C) Leg.

VI. Cautions.

(a) Counter-sink screws unless rounded-headed screws are used.

(b) Have legs of exact length.

(c) Cut corners at exact angle else legs will have twisted position.

LESSON NO. VIII.

Foot Stool.

I. Steps in the Process.

(a) Selecting material. (Almost any wood.)
(b) Getting out rough stock.
(c) Fitting the different parts to size. (See Lesson I.)
(d) Laying out and making top.
(e) Modeling and making side-rail.
(f) Modeling and making ends.
(g) Assembling and screwing together.

II. Dimensions.

(a) Finished dimensions.

1. Top. 16 x 10 x 3-4 inches.
2. Rails, 14 x 3 x 3-4 inches.
3. Ends, 10 x 10 x 3-4 inches.
4. Screw blocks, 5 1-2 x 3-4 x 3-4 inches.

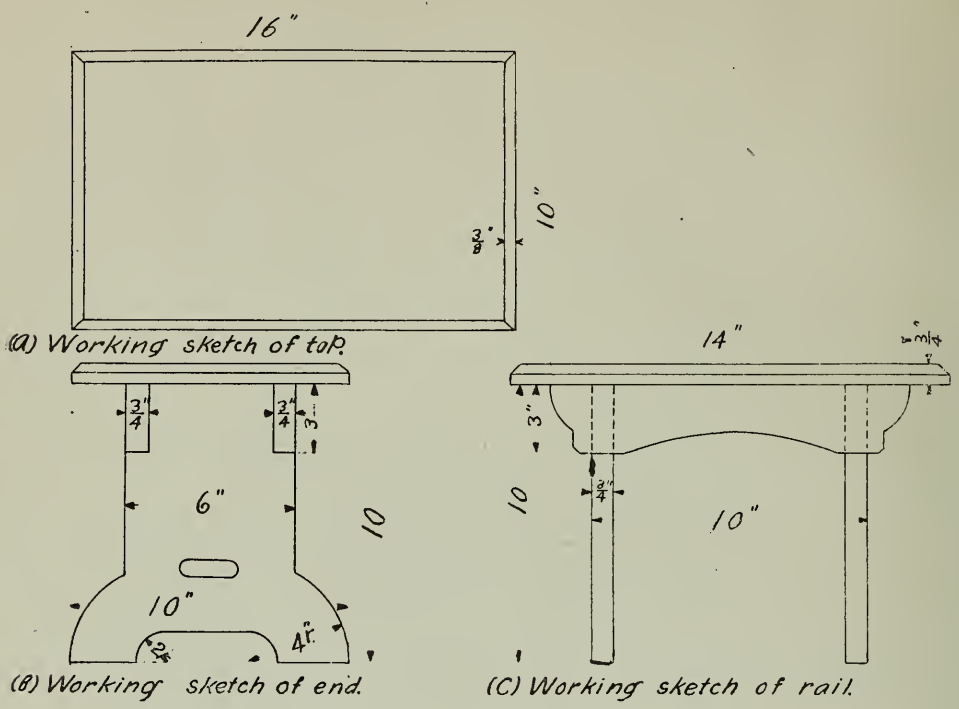
III. Tools.

(a) Rip, cross-cut and turning saws, brace and bit, squares, planes, marking gauge, chisel, mallet, screw-driver and clamps

IV. Testing Work.

(a) Testing for square corners.
(b) Testing for balanced projections.

V. Drawings.



VI. Cautions.

(a) Do not place screw blocks quite flush with top.

LESSON NO. IX.

Simple Table.

I. Steps in the Process.

(a) Selecting material.
(b) Getting out rough stock.
(c) Fitting parts to size.
(d) Gluing, clamping and finishing up top.
(e) Laying-out, mortising and finishing legs.
(f) Laying-out and cutting rails with tenons.
(g) Assembling and clamping together.

II. Dimensions.

(a) Top, 36 x 28 x 7-8 inches.
(b) End rails, 24 x 5 x 7-8 inches.

(c) Side rails, 32 x 5 x 7-8 inches.
(d) Legs, 2 1-4 x 2 1-4 x 31 inches.

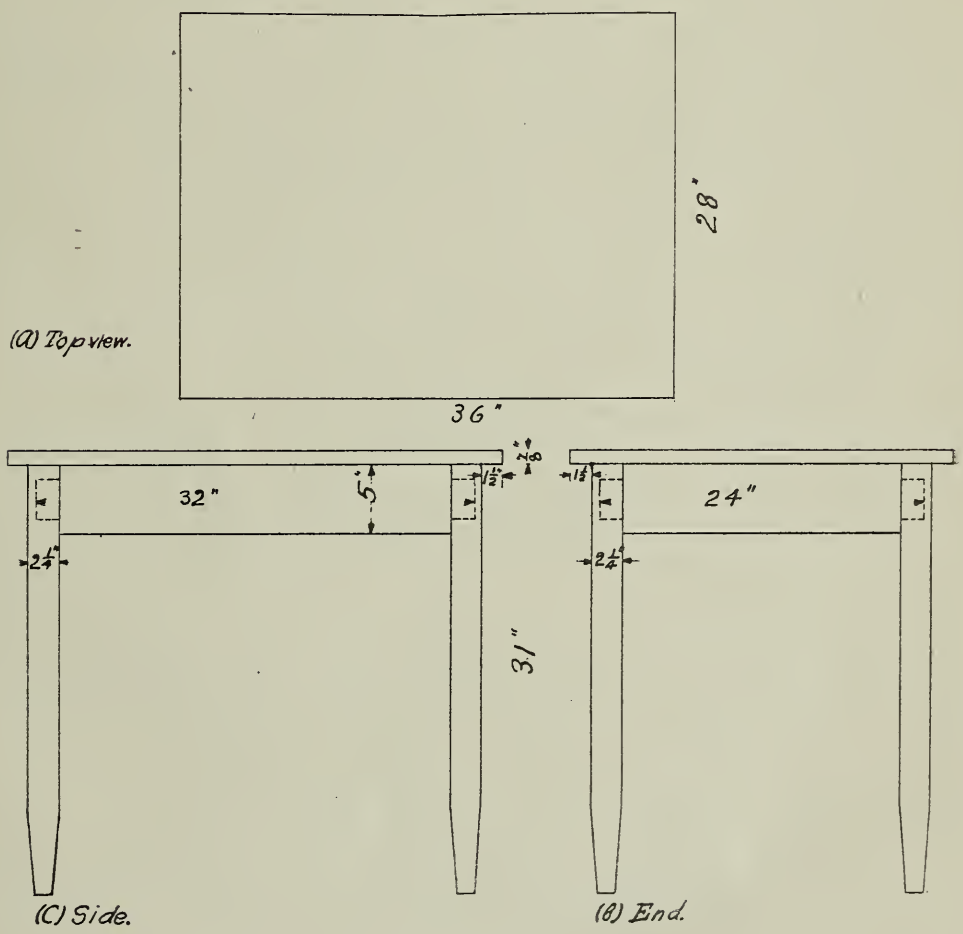
III. Tools.

(a) Cross and rip-saws, fore-plane, back-plane, brace and bit, chisel, mallet, marking gauge, try-square, carpenter's square.

IV. Testing Work.

(a) Test for square frame after gluing together.
(b) Test top for wind and warp.

V. Drawings.



VI. Cautions.

(a) Do not project top more than two inches on sides and ends.

(b) Tenons should fit mortises with exceptional snugness.

LESSON NO. X.

Chafing Dish Stand.

I. Steps in the Process.

(a) Selecting material. (A good, hard wood.)
(b) Getting out rough stock.
(c) Fitting parts to size. (See Lesson I.)
(d) Gluing, clamping, and finishing top and shelf.
(e) Laying-out and mortising legs.
(f) Laying-out, modeling, mortising, and tenoning rails.
(g) Laying-out, modeling, and tenoning slats.
(h) Assembling and clamping together.

II. Dimensions.

(a) Top, 16 x 18 x 3-4 inches.
(b) Legs, 1 3-4 x 1 3-4 x 21 inches.
(c) Shelf, 12 x 18 x 3-4 inches.
(d) Top rails, 4 x 15 x 3-4 inches.
(e) Bottom rails, 3 x 15 x 3-4 inches.
(f) Slats, 10 x 1-2 inches thick.

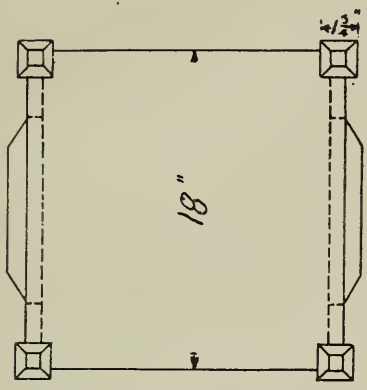
III. Tools.

(a) Rip and cross-cut saws, fore-plane, block-plane, marking gauge, brace and bit, chisel, mallet, back saw and squares.

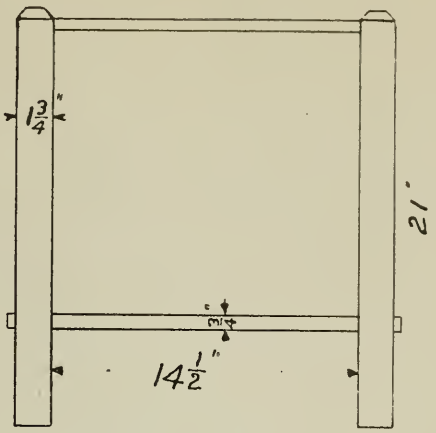
IV. Testing Work.

(a) Test for square corners; (b) for tight joints; (c) for good design.

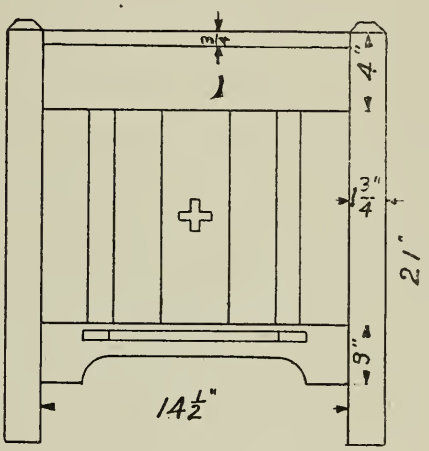
V. Drawings.



(A) Top view.



(B) Side view.



(C) End view.

VI. Cautions.

(a) Through mortise and tenon joints should be chamfered flush with the rail.

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